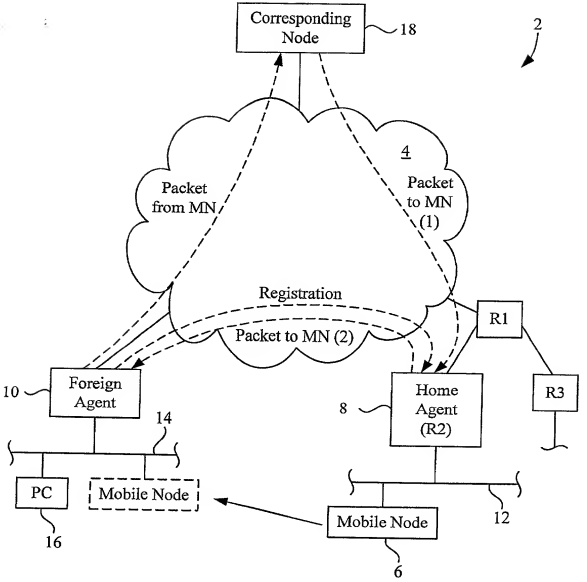
Corresponding Node
18
2
4
Packet from MN
Packet to MN (1)
Registration
Packet to MN (2)
R1
R3
10
Foreign Agent
8
Home Agent (R2)
14
PC
Mobile Node
16
Mobile Node
12
6

FIGURE 1A

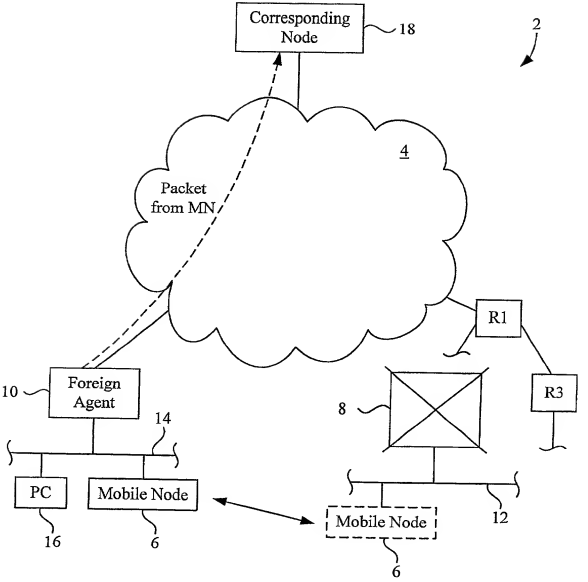
Corresponding Node
18
2
4
Packet from MN
R1
R3
10
Foreign Agent
8
14
PC
Mobile Node
16
6
Mobile Node
12
6

FIGURE 1B

Node ID (e.g., IP address) 202	Care-of address 204

FIG. 2

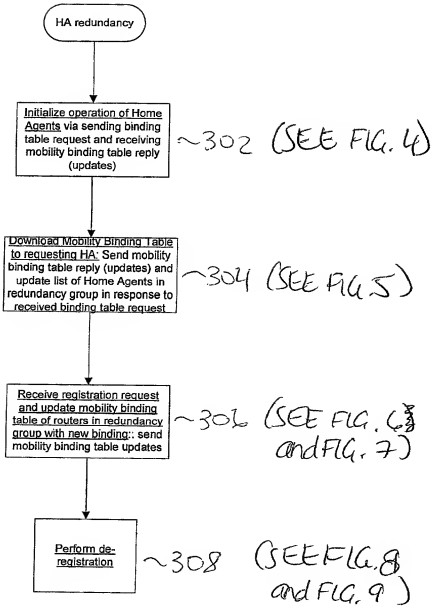
HA redundancy
Initialize operation of Home Agents via sending binding table request and receiving mobility binding table reply (updates)
~302 (SEE FIG. 4)
Download Mobility Binding Table to requesting HA: Send mobility binding table reply (updates) and update list of Home Agents in redundancy group in response to received binding table request
~304 (SEE FIG 5)
Receive registration request and update mobility binding table of routers in redundancy group with new binding:: send mobility binding table updates
~306 (SEE FIG. 6 and FIG. 7)
Perform de-registration
~308 (SEE FIG. 8 and FIG. 9)

FIG. 3

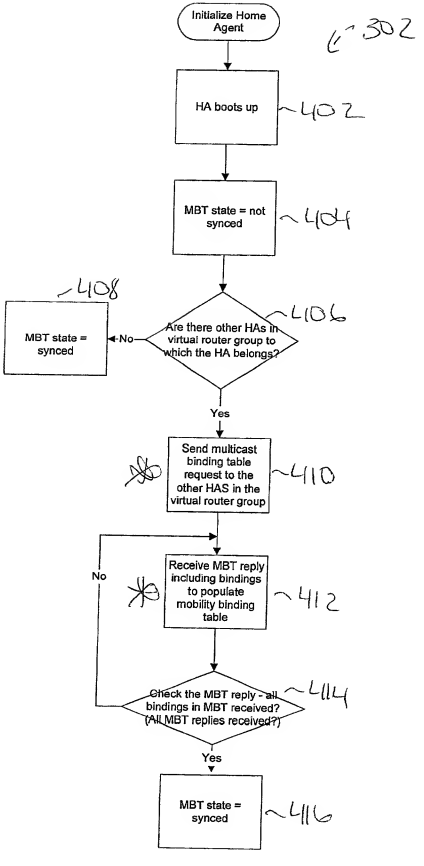
Initialize Home Agent
402
HA boots up
404
MBT state = not synced
406
Are there other HAs in virtual router group to which the HA belongs?
No
408
MBT state = synced
Yes
410
Send multicast binding table request to the other HAS in the virtual router group
412
Receive MBT reply including bindings to populate mobility binding table
No
414
Check the MBT reply - all bindings in MBT received? (All MBT replies received?)
Yes
416
MBT state = synced

FIG. 4

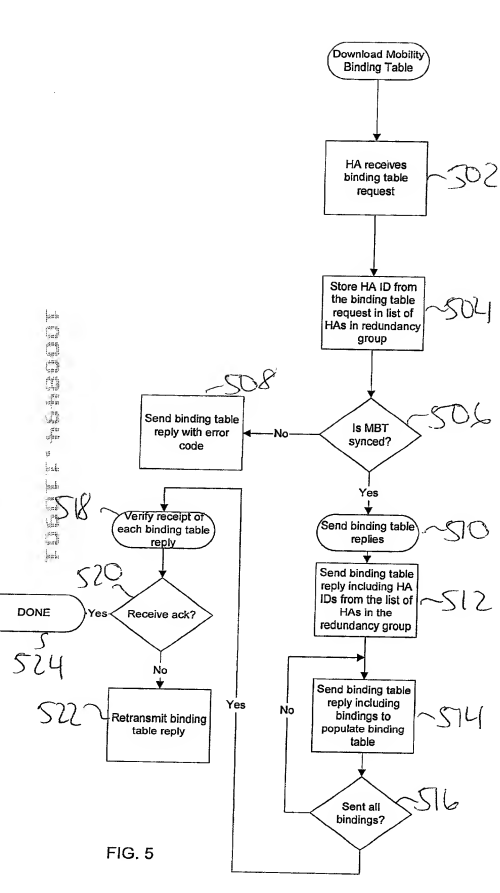
304
Download Mobility Binding Table
HA receives binding table request
302
Store HA ID from the binding table request in list of HAs in redundancy group
504
Is MBT synced?
506
No
Send binding table reply with error code
508
Yes
Send binding table replies
510
Send binding table reply including HA IDs from the list of HAs in the redundancy group
512
Send binding table reply including bindings to populate binding table
514
Sent all bindings?
516
No
Yes
Verify receipt of each binding table reply
518
Receive ack?
520
Yes
DONE
524
No
Retransmit binding table reply
522
Yes

FIG. 5

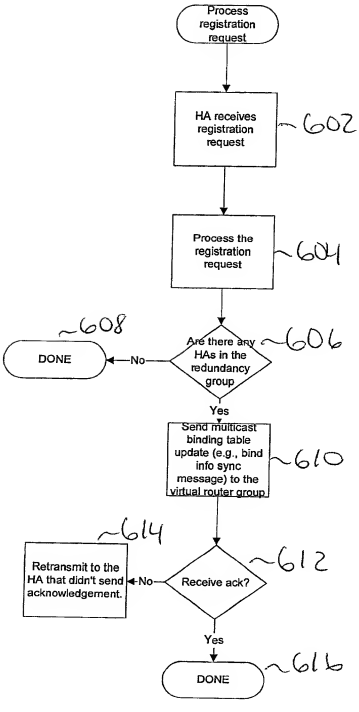
Process registration request
HA receives registration request
602
Process the registration request
604
Are there any HAs in the redundancy group
606
No
DONE
608
Yes
Send multicast binding table update (e.g., bind info sync message) to the virtual router group
610
Receive ack?
612
No
Retransmit to the HA that didn't send acknowledgement.
614
Yes
DONE
616

FIG. 6

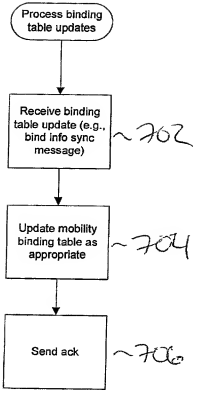
Process binding table updates
Receive binding table update (e.g., bind info sync message)
702
Update mobility binding table as appropriate
704
Send ack
706

FIG. 7

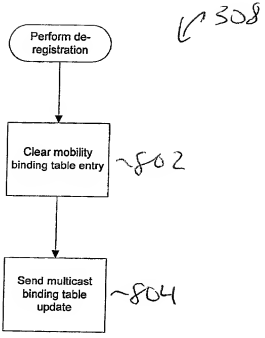
308
Perform de-registration
Clear mobility binding table entry
802
Send multicast binding table update
804

FIG. 8

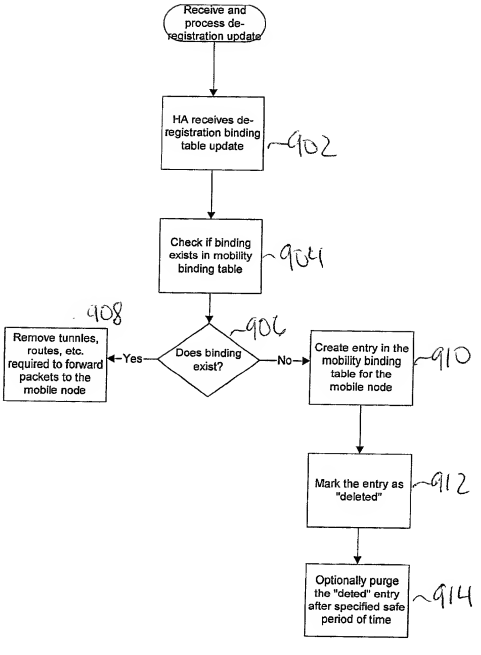
Receive and process de-registration update
HA receives de-registration binding table update
902
Check if binding exists in mobility binding table
904
Does binding exist?
906
Yes
No
Remove tunnles, routes, etc. required to forward packets to the mobile node
908
Create entry in the mobility binding table for the mobile node
910
Mark the entry as "deleted"
912
Optionally purge the "deted" entry after specified safe period of time
914

FIG. 9

Type 1002	Granted Lifetime 1004	Remaining Lifetime 1006
Home Address 1008	Home Agent 1010	Care-of Address 1012
Identification 1014		

FIG. 10

Type 1102	Code 1104	Home Address 1106
Identification 1108		

FIG. 11

Type 1202	NumHA 1204	Identification 1206
Home Agent Address(es) 1208		

FIG. 12

Type 1302	Code 1304	NumBind 1306
MoreBind 1308	Identification 1310	Extensions 1312

FIG. 13

Type 1402	Code 1404	MoreBind 1406
Identification 1408		

FIG. 14

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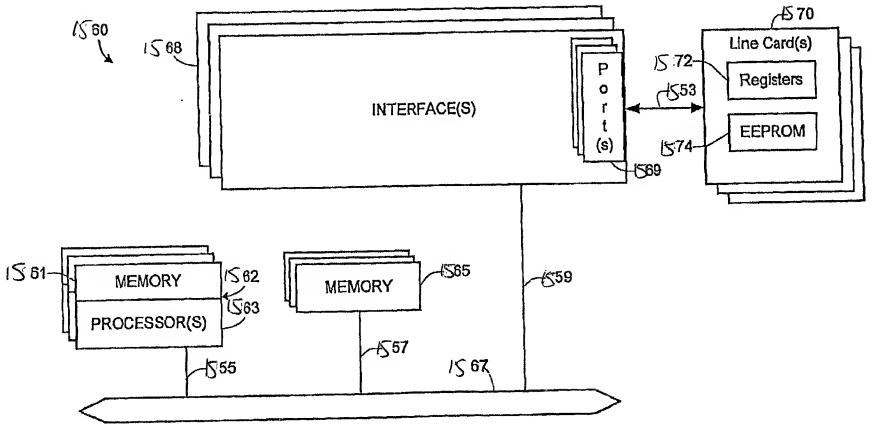

Figure 15